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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/975,749
Filing Date: October 10, 2001
Appellant(s): GIBBS ET AL.

Robert W. Bergstrom
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/17/07 appealing from the Office action mailed 12/13/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The appellant is correct that no amendment after final has been filed. However, an informal or non-compliant amendment was mailed May 4, 2006, and received May 9, 2006. This amendment was not entered. The last amendment was filed September 29, 2006.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,720,037	Biliris et al.	2-1998
6,332,175	Birrell et al.	12-2001

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 28-37 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Birrell et al. (USPN 6,332,175) in view of Biliris et al. (USPN 5,720,037) (hereinafter Birrell and Biliris, respectively).

Regarding claim 28, Birrell teaches a portable media player (Col. 3, lines 31-39 and Fig. 1) comprising:

a processor that executes commands (Col. 4, lines 30-37 and Fig. 1, unit 102);
a random-access-memory component that stores compressed data in more than two different random-access-memory buffer areas, each random-access- memory buffer lockable and unlockable by the processor (Col. 6, lines 5 - Col. 7, line 11, Col. 8, lines 35-49, and Fig. 1, unit 108);
a codec component, controlled by the processor, that reads compressed data from a locked random-access-memory buffer, the locked random-access-memory buffer selected from among the more than two different random-access-memory buffer areas and locked by the processor to prevent writing of the locked random-access-memory buffer by another component, and that generates a decompressed signal from the read compressed data that is rendered by a data-rendering component (Col. 5, lines 9-14, lines 22-23, Col. 5, line 62 - Col. 6, line 4, Fig. 2B, unit 168, and Fig. 3, step 220);
a non-volatile, mass-storage component that stores compressed data and that writes compressed data, under control of the processor, to unlocked random-access-memory buffers (Col. 5, lines 9-14, lines 20-21, Col. 6, lines 5-58, Fig. 1, unit 102, 104, and 108, Fig. 2B, unit 166, and Fig. 3); *and*
a battery power supply to provide electrical power to the processor, random-access memory component, codec component, data-rendering component, and non-volatile, mass-storage component (Col. 4, lines 1-2, line 15, and Fig. 1, unit 122).

For example, Birrell teaches a portable multimedia player (Col. 3, lines 35-38), which uses several large buffers (Col. 6, lines 29-42), for instance in a preferred embodiment, stores 10 minutes of audio (Col. 6, lines 29-58). The player allows fast-forwarding (i.e.

look-ahead buffers) and rewinding (i.e. look-back buffers) (Col. 6, line 59 - Col. 7, line 11). It is inherent that a portion of the RAM is locked, and the processor prevents the data to be overwritten. Likewise, it is inherent that a portion of the RAM is unlocked, and the processor allows data from the mass-storage component to be written to the RAM. However, Birrell does not teach a plurality of buffers.

Biliris teaches a multimedia server, which allows fast-forwarding and rewinding of multimedia streams (Col. 2, lines 34-51, Col. 11, lines 21-65, and Fig. 5A). Biliris teaches a method implementing a circular buffer, or queue, of a plurality of buffers (Col. 5, line 48 - Col. 6, line 1 and Col. 11, lines 21-65), wherein the large buffer taught by Birrell could be replaced for the purpose of reducing buffer areas to a certain amount of samples, or seconds of samples (i.e. each buffer can correspond to be fixed to 60 seconds). One of ordinary skill at the time of the invention would be motivated to use a plurality of buffers, with associated start and end addresses in memory, so that the processor can issue seek commands more efficiently, by skipping to the beginning of one of many buffers in a circular queue separated by a defined granularity (Biliris, Col. 10, lines 20-30, Col. 11, lines 57 - Col. 12, line 26, Col. 12, line 39 - Col. 13, line 7, and Col. 13, line 59 - Col. 14, line 18). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Birrell and Biliris for the purpose of improving fast-forward, rewinding, or trick play commands.

Regarding claim 29, the further limitation of claim 28, Birrell teaches a portable media player, wherein the processor continuously monitors progress of the codec component in decompressing data in order to:

power up the non-volatile, mass-storage component (Col. 6, lines 14-16);
direct the non-volatile, mass-storage component to write additional compressed data to multiple random-access-memory buffers and redirect the codec component to read the additional compressed data from the multiple random-access-memory buffers so that the codec component can continue to generate a decompressed signal without interruption (Col. 6, lines 5-58); *and*
power-down the non-volatile, mass-storage component (Col. 6, lines 14-16).

The combination teaches these features.

Regarding claim 30, the further limitation of claim 29, Birrell teaches a portable media player, wherein

the processor, following reception of a fast-forward command that redirects rendering, by the data-rendering component, of compressed data starting at a desired location within a compressed- data sequence not currently stored within the more than two different random-access-memory buffer areas, directs the non-volatile, mass-storage component to write compressed data, starting at a location prior to the desired location in the compressed-data stream and ending at a location following the desired location in the compressed- data stream, to multiple random-access-memory buffers (Col. 6, line 59 - Col. 7, line 11).

The combination teaches these features, wherein Birrell teaches a large buffer for fast-forwarding and rewind operations and Biliris teaches a large buffer composed of a plurality of smaller or sub-buffers.

Regarding claim 31, the further limitation of claim 29, see the preceding argument with respect to claim 30. The combination teaches a portable media player wherein

the processor, following reception of a rewind command that redirects rendering, by the data-rendering component, of compressed data starting at a desired location within a compressed-data sequence not currently stored within the more than two different random-access- memory buffer areas,

directs the non-volatile, mass-storage component to write compressed data, starting at a location prior to the desired location in the compressed-data stream and ending at a location following the desired location in the compressed- data stream, to multiple random-access-memory buffers (see the preceding argument with respect to claim 30).

The combination teaches these features.

Regarding claim 32, the further limitation of claim 29, see the preceding argument with respect to claim 30. The combination teaches a portable media player wherein

the processor following reception of a rewind command that redirects rendering, by the data-rendering component, of compressed data starting at a desired location within a compressed- data sequence not currently stored within the more than two different random-access-memory buffer areas, directs the non-volatile, mass-storage component to write compressed data, starting at a location prior to the desired location in the compressed- data stream and ending at a location at which subsequent compressed-data of the compressed-data sequence is already stored in the more than two different random- access-memory buffer areas, to multiple random-access-memory buffers (Birrell teaches a threshold for determining reading data from the mass-storage and writing to the random-access-memory).

The combination teaches these features.

Regarding claim 33, the further limitation of claim 29, Birrell teaches a portable media player wherein

the processor, following reception of a fast-forward command, predicts portions of a compressed-data sequence that are likely to be accessed by additional fast-forward commands and directs the non-volatile, mass-storage component to write predicted portions of the compressed data to multiple random-access-memory buffers (Col. 8, lines 35-49).

In the combination, Birrell teaches many data sequences, or N last played songs, that are written to buffers in a non-volatile low power memory (i.e. a flash based memory). Birrell teaches that it is desirable to have N last played songs quickly accessible in the flash memory after turning on the portable media player (Col. 7, lines 27-42). Birrell

also teaches the power down condition may be one of a variety of conditions (Col. 7, lines 23-26). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings within Birrell and provide prediction buffers in the main random-access-memory instead of the flash memory for quicker access.

Regarding claim 34, the further limitation of claim 29, see the preceding argument with respect to claim 29. The combination teaches a portable media player wherein

the processor minimizes the number of times that the processor powers up the non-volatile, mass-storage component.

The combination teaches these features (Birrell, Col. 6, lines 56-58).

Regarding claim 35, the further limitation of claim 29, see the preceding argument with respect to claims 29 and 34. The combination teaches a portable media layer wherein

the processor minimizes the duration of time during which the non-volatile, mass-storage component is powered up.

The combination teaches these features.

Regarding claim 36, the further limitation of claim 29, see the preceding argument with respect to claim 28, the combination teaches a portable media player wherein

the processor locks only a single random-access-memory buffer at any point in time.

In the combination, Birrell teaches that buffers that are needed for rewind are locked and only accessible by read commands. Biliris teaches that various modes of granularity can be used to aid in fast-forwarding and rewinding. It is possible that one buffer, is 57 seconds long (as mentioned in one embodiment of Biliris) and the predetermined threshold, until a read from the mass media is required, is also 57 seconds long. This combination would require the processor to lock only one buffer at any point in time.

Regarding claim 37, the further limitation of claim 29, see the preceding argument with respect to claim 28. Birrell teaches a portable media player wherein

> *the compressed data is a compressed audio signal* (Col. 2, lines 60-62; *and*
> *the decompressed signal is a decompressed audio signal* (Col. 2, lines 62-65).

The combination teaches a portable audio player that plays compressed audio.

(10) Response to Argument

Regarding claim 28, the combination of Birrell and Biliris teaches these features. Specifically, the claimed limitation "each random-access-memory (RAM) buffer lockable and unlockable by the processor" is inherent in the teaching of Birrell. The Office reads the claim language using the broadest reasonable interpretation consistent with the specification. The specification discloses the applicant's definition of locked and unlocked, wherein locked is described as available for read operations but not write operations and unlocked is described as available for both operations (p. 17, line 27 - p. 18, line 8). Birrell inherently teaches a buffer that is locked for read only operations, because the rewind buffer created by Birrell must have some indication to retain and not

overwrite data in RAM (Col. 6, line 64 - Col. 7, line 5). If Birrell did not lock portions of the RAM, which contain play data, then the play control logic would overwrite all of the data stored in RAM. Therefore the teachings of retaining previously-played data in RAM reads on a lockable RAM buffer. Furthermore, this also makes inherent an unlockable RAM buffer, because at any instant in time when the current play position in the buffer advances, a new portion of previously-played data, which was previously protected in the RAM by a retention threshold, will become available to overwrite. Birrell's invention would not function properly if it could not free memory in the RAM after it is retained for some portion of time, because it would run out of free memory to store more audio samples for future playback.

Methods of coordinating access to memory and locking, by use of semaphores and spin locks are discussed by on pages 7 to 8 of the applicant's arguments. The examiner does not understand how this definition of locking is to be read into the claims. The claim language does not invoke 35 USC 112 sixth paragraph limitations, and as discussed above the term "locking" is given a reasonably broad interpretation with respect to the specification. The applicant's specification, starting on page 17, line 26, recites:

> Part of the efficiency provided by the buffering techniques of the system 100 is that only one buffer is "Locked" for a reading to the CODEC 114 while the other buffers are available for read/write operations.

The broadest reasonable meaning appears to be where locked is defined as allowing read-only operations, and unlocked is defined as allowing both read and write operations.

With respect to section 11, the Examiner still asserts that Birrell teaches "buffers that are needed for rewind are locked and only accessible by read commands." Birrell discloses these teachings from column 6, line 64 to column 7, line 5. Birrell clearly states, "the final portion of the previously-played data will be **retained** in case the user wishes to reverse the direction of play." (emphasis added) This teaches that some portion of data in memory is kept, or locked, because the idea of retention does not work if the data can be overwritten. Only when the previously-played data falls outside this final portion, will the buffer be freed, or unlocked, so that new data can be written to it.

With respect to the motivation of combination, it is not clear why Birrell would have to be aware of his invention's own shortcomings or inefficiencies with respect to other teachings. The motivation to combine these two references is to improve fast-forward, rewind, or trick-play operations, wherein trick-play refers to fast-forwarding or rewinding. Biliris teaches a circular buffer, wherein there is a defined granularity (Col. 10, lines 20-30). Granularity refers to the smallest temporal difference between adjacent buffers, wherein the smallest granularity could be defined as the time between two adjacent samples, or the time associated with the sampling frequency. If audio were sampled at 44,100 samples per second (44.1 KHz is a typical CD Audio sampling frequency), wherein the smallest granularity would be 1/(44100) of a second. Biliris

teaches separating the buffers by a larger amount, wherein they use an example of 57 seconds. In a typical system, there could be 2,513,700 samples (57 seconds*44,100 samples per second) between the two buffers, which results in a quicker fast-forward or rewind operation when the processing system can jump between the boundaries of buffers. In other words, Biliris discloses a method of skipping a lot of data by jumping from buffer to buffer, which is well known in video processing. One of ordinary skill in the art at the time of the invention would look to this art for ideas, because historically similar concepts and ideas have been applied to both video and audio. Essentially, Biliris is relied upon to teach "a plurality of buffers", and the circular buffer with a designated granularity would be an obvious choice. The statement " One of ordinary skill at the time of the invention would be motivated to use a plurality of buffers, with associated start and end addresses in memory, so that the processor can issue seek commands more efficiently, by skipping to the beginning of one of many buffers in a circular queue separated by a defined granularity " should be clarified. The Examiner meant to state that one of ordinary skill in the art at the time of the invention would be motivated to use a plurality of buffers, with associated start and end addresses in memory, so that the processor can issue seek commands more efficiently, by skipping to the beginning of one of many buffers, which are separated by a defined granularity, in a circular queue. It is the buffers in the queue that are separated by a defined granularity, which is to say that each buffer is defined to contain a certain amount of samples and no more. The queue is a collection of these buffers, and the granularity refers to the size between adjacent buffers. A large granularity exists when each buffer

contains several tens of seconds of samples, and a small granularity exists when each buffer contains relatively small amounts of samples (i.e. tenths of seconds). Therefore the justification, or motivation to combine is that the combination of Birrell and Biliris allows the user can quickly rewind or fast-forward according to the granularity chosen by the designer.

The examiner respectfully disagrees that the rejection should be reversed. Only those arguments having been raised are being considered and addressed in the Examiner's Answer. Any further arguments regarding other elements or limitations not specifically argued or any other reasoning regarding deficiencies in a prima facie case of obviousness that the appellant could have made are considered by the examiner as having been conceded by the appellant for the basis of the decision of the appeal. Therefore, the examiner is not addressing them for the Board's consideration. Should the panel find that the examiner's position/arguments or any aspect of the rejection is not sufficiently clear or a particular issue is of need of further explanation, it is respectfully requested that the case be remanded to the examiner for further explanation prior to the rendering of a decision (see 37 CFR 41.50(a)(1) and MPEP 1211).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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DRS 9/13/07

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